NavMed 369

UNITED STATES NAVY

MEDICAL NEWS LETTER

Editor - Captain L. B. Marshall, MC, USN

Vol. 21 Friday, 20 March 1953 No. 6

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Cardiac Asthma

"Cardiac asthma" is not asthma at all but a paroxysmal type of dyspnea. Although it may be nocturnal in character it is more likely to be related to physical exertion, the latter in such cases always being accompanied by dyspnea between paroxysms. Thus it differs from pure bronchial asthma, in which the dyspnea does not occur in the free periods unless there is some associated respiratory disturbance.

A fundamental requirement for paroxysmal cardiac dyspnea, as the author calls it, is an increase in pulmonary venous pressure. Without this, paroxysmal dyspnea cannot occur, and this increased pressure is the keystone to the concept and eventually to the treatment.

There may or may not be a conspicuous increase in pulmonary arterial pressure. If arterial pressure is increased, it is an exaggeration of the normal in the opposite direction to that in bronchial asthma; the rise occurs with inspiration and the fall with expiration, whereas the reverse is true in bronchial asthma.

The increased pulmonary venous pressure leads to a series of local pulmonary disturbances, including pulmonary venous engorgement, alveolar edema, and pulmonary rigidity, as a result of which certain portions of the lungs become like erectile tissue. Another resulting disturbance is swelling of the bronchial mucous membrane, adding to the circulatory disturbance a certain degree of obstructive inspiratory and expiratory embarrassment. This, however, is minor compared with the turgescence resulting from increased pulmonary venous pressure and edema.

As a result of these circulatory disturbances there is dyspnea on exertion, in some cases almost constant, which is quite different from the dyspnea of bronchial asthma. The cough of cardiac dyspnea is conspicuously different from that of bronchial dyspnea. The sputum in bronchial asthma is tenacious and scanty; that in cardiac dyspnea is fluid and abundant, and may increase to large amounts of serous, blood-tinged, or even bright red, thin edema fluid.

Paroxysmal cardiac dyspnea may occur during sleep and therefore is often confused with bronchial asthma which, if caused by feathers, wool, horse hair, or other epidermal agents, occurs most often during sleep, but the clinical pattern is entirely different. The respirations in cardiac dyspnea are rapid and shallow and not obstructive in any sense of the word; the rales are moist and located at the bases of the lungs and not in the upper lobes except in very extreme situations, and are caused by edema and not by bronchial obstruction or mucous secretion. Dry rales are relatively rare, and when present in paroxysmal cardiac dyspnea they may be and probably are due to edema of the bronchial mucous membrane. There is no evidence of emphysema. Roentgenograms reveal bilateral engorgement in the lower portions of the lungs. There is a reduced vital capacity at all times and not just during a paroxysm. The circulation rate is prolonged, there is acute

arterial anoxia, and acute carbon dioxide and lactic acid acidosis is present; all these manifestations conspire to make the dyspnea more agonizing to the patient.

Cardiac dyspnea is found first—and probably the most important, because it occurs early in life—in mitral valvular disease, particularly mitral stenosis. The degree of dyspnea and of the paroxysms both on exercise and during sleep is a good indication of the severity of mitral stenosis. The next most common cause is hypertension with left-sided cardiac failure. Associated from a similar point of view in the dynamics of this circulatory disturbance is aortic stenosis, which is really a form of hypertension with the block occurring at the aortic orifice instead of at the peripheral arterioles. A fourth cause is left ventricular failure due to myocardial infarction. These conditions account for more than 95% of cases of paroxysmal cardiac dyspnea.

Whereas adrenalin and epinephrine are indicated in bronchial asthma, they make cardiac dyspnea much worse. Aminophyllin is useful occasionally in bronchial asthma; this is also true in paroxysmal cardiac dyspnea.

In patients who are subject to nocturnal attacks, the author advises that they invest in a small tank of oxygen and a simple mask. Then if they awaken in the night in terror of suffocation they can put on the mask, turn on the oxygen and get relief.

All patients with paroxysmal cardiac dyspnea should be on maintenance doses of digitalis, and by that the author does not mean one of the high-powered new glycosides. The trend is away from these specific glycosides and toward the Withering and dry digitalis leaf prepared under proper pharmaceutical standards. It is simple and safe; overdosage is difficult. (Postgraduate Medicine, Feb. 1953, J.C. Meakins)

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Treatment of Essential Hypertension With Beta-alkylamines

Because of a lack of understanding of the various factors in the pathogenesis of essential hypertension many therapeutic approaches have been investigated. During the past 5 years the authors have had the opportunity to study the effects of 6 adrenergic blocking agents of the beta-alkylamine group after oral and/or intravenous administration to 103 patients with essential hypertension.

In order to clarify the background of such a study the following orientation is presented. Five factors are known to influence the blood pressure: (1) blood volume, (2) viscosity, (3) cardiac output, (4) arterial elasticity, and (5) peripheral resistance. In uncomplicated essential hypertension only the fifth factor, which is under humoral and neurogenic control, has been shown to be abnormal.

Drugs intended to lower the blood pressure of patients with essential hypertension may be called "hypotensogenic agents." Such an agent should meet the following requirements: (1) lower the blood pressure significantly; (2) not unduly distress the patient or have significant toxicity; (3) relieve the symptoms and signs associated with hypertension; (4) require no more than 3 doses each day; and (5) be effective orally. Also, it is desirable, but not essential that it benefit a large percentage of patients. Clinicians test large numbers of hypertensive patients for pheochromocytoma or coarctation of the aorta in order to benefit this group which comprises less than 1% of the hypertensive population. It appears to be equally reasonable to treat patients with essential hypertension with an agent effective in a similar small percentage.

Forty intravenous infusions were given to 24 patients. One-half of the patients who received dibenzyline intravenously in doses of 7 to 150 mg. had a fall in blood pressure with associated adrenergic blockade and occasional untoward effects including shock, stupor, and coma. Postural hypotension persisted for 1 to 4 days after the injection.

Eighty-five patients received 128 courses of oral therapy. Of the 6 compounds, only dibenzyline (688-A or N-phenoxyisopropyl-N-benzyl-beta-chlorethylamine hydrochloride) was effective. Sixty-two patients received 85 courses of dibenzyline over 916 patient-therapy days. Doses ranged from 37.5 to 2,500 mg. per day, with a mean of 475 mg. per day.

Thirteen percent showed a marked decrease in blood pressure and another 20% a definite though less pronounced effect. Sixty-seven percent failed to respond. Hospitalized patients responded more frequently and to a greater degree than outpatients. There was no way of predicting which patients would respond. Most of those who had shown a good response while in the hospital failed to respond to increased doses when outpatients. Only 13% reported symptomatic benefit from dibenzyline. There was no correlation between those claiming subjective benefit and those showing objective benefit.

Eighty-seven percent reported nasal congestion, 68% dizziness, especially upon standing, 54% indigestion, anorexia, nausea, and occasional vomiting, 31% fatigue and weakness, 8% epistaxis, and others reported blurred vision, palpitations, and shortness of breath. Undesirable effects diminished with continued therapy but hypotensogenic effects also diminished.

Adrenergic blockade was evaluated by nor-epinephrine intravenously in 44 tests and with adrenalin intravenously or subcutaneously in 45 tests. There was no correlation between the presence or absence of adrenergic blockade and the patient's therapeutic response.

Dibenzyline administered orally appears to be of limited value in the treatment of essential hypertension; however, in a disorder with such a high morbidity and mortality any agent benefiting even a small minority of patients deserves careful study. Further clinical investigation of dibenzyline especially in combination with other hypotensogenic agents and procedures appears to be indicated. (Am. J. Med., Feb. 1953, J. L. Bakke and R. H. Williams)

Plasmacytoma of the Lung

Extramedullary plasmacytoma is a relatively rare tumor and much confusion exists concerning its origin and behavior. A survey of the literature shows that about 185 cases of extramedullary plasmacytoma have been reported since 1905. Hellwig reviewed 127 cases in 1943 and added 1 of his own. This represented all cases reported from 1905 to 1943, with the exception of 24 cases reported by Jaeger in 1942. Since that time a number of cases have been added and several reviews of the subject have been presented.

In all of these, only 4 extramedullary plasmacytomas which were thought to have originated in the lung were reported. The first was reported by Gordon and Walker in 1944.

Because of the obvious rarity of this condition, and because of other unique features, it was thought useful to report a plasmacytoma of the lung which the authors have seen. They believe this to be the fourth confirmed plasmacytoma of the lung. It is the youngest patient (age 3 years) on record with extramedullary plasmacytoma in any location and represents the longest follow-up (8 years).

It has been maintained by some that extramedullary plasmacytomas are granulomatous in nature, and consequently are benign. However, a review of the clinical experience with these tumors shows this to be a dangerous viewpoint. Hellwig found that of 128 cases reported in his review, 29 showed definite invasion locally. Thirteen of these showed distant metastases. Figi, Broders, and Havens reported 11 cases of plasmacytoma in 1945. Five of the eleven cases showed frankly malignant behavior with either extensive local invasion or distant metastases. On the basis of their experience they stated: "Plasmacytomas are malignant lesions and they should be classified and treated as such." They found no evidence to suggest that these lesions are granulomatous or inflammatory in nature.

Gross appearance may also be misleading. Apparent encapsulation and sharp delineation from surrounding tissue have been noted in lesions which have given rise to metastases. Because abundant plasma cells have been noted in some inflammatory diseases, particularly syphilis, tuberculosis, and neisserian infections, many observers regard practically all lesions containing plasma cells as granulomas. These inflammatory lesions should be sharply separated from plasmacytomas such as the one reported here, in which there is little or nothing to suggest an inflammatory lesion.

Sixty-five percent of the reported cases have been treated by surgery alone, about 18% have been treated by a combination of surgery and radiation, and the remainder have been treated by radiation alone. Some of the tumors reported were apparently radiosensitive and good results were obtained but a number of others failed to respond to roentgenotherapy as did the authors' case. Surgical treatment was then utilized while still feasible. In view of the good results obtained in the authors' 1 patient and the good immediate result obtained by surgical means in the other 3 plasmacytomas of the lung,

surgery would certainly appear to be the treatment of choice when the lesion is pulmonary in origin. According to the results of therapy reported in the literature, it would seem that surgery is also the treatment of choice in those tumors elsewhere in the body that are amenable to excision. A number of these tumors have recurred, however, despite combined surgery and radiation. The best results are apparently obtained in tumors located in the conjunctiva. (J. Thoracic Surg., Feb. 1953, L. D. Hill and M. L. White, Jr.)

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Hemolytic Anemia

Hemolytic anemia is characterized by an excessive rate of red cell destruction so that the normal 100- to 120-day life span of the red cell is shortened. In some patients the average life of the red cell is only a few days.

Marking of the red cells by various tracer techniques has aided greatly in the understanding of the general processes involved in the in vivo destruction of red cells in the various hemolytic anemias. Heavy nitrogen, radiocarbon, and radioiron are useful in studying red cell dynamics. However, the most versatile method for tracing the fate of red cells utilizes the natural agglutinogens of the red cell. This method is known as the Ashby differential agglutination technique. On the basis of the different agglutination studies the hemolytic anemias fall into two major categories. I. Hemolytic anemia due to intrinsically defective red cells, and II. Hemolytic anemia due to extrinsic causes. Occasionally an anemia in group I can be complicated by some extrinsic abnormality.

Hemolytic anemias due to intrinsic defects include: 1. Hereditary spherocytosis (familial hemolytic anemia, congenital hemolytic jaundice). 2. Sickle cell anemia. 3. "Mediterranean" anemia. 4. Hereditary nonspherocytic anemia. 5. Paroxysmal nocturnal hemoglobinuria. Although pernicious anemia is not a hemolytic anemia in the usual sense, the cells are abnormally constructed and have a shortened life span. The hemolytic anemias due to extrinsic factors constitute a large group caused by many different agents.

Because hemolytic anemia can arise from a wide variety of causes, rational therapy demands that the pathogenesis of the excessive blood destruction must be accurately diagnosed in the individual patient. When an infectious disease is the cause, appropriate specific treatment of the infectious disease is the avenue of approach. When the hemolysis is due to toxic agents there is no specific therapy other than insurance against further exposure to the inciting agent.

Whenever severe hemolytic anemia is associated with hyperimmune bodies, treatment with ACTH or cortisone can be tried. There is some

evidence that ACTH and cortisone reduce the titers of the antibodies. However, if the hemolytic process with immune antibodies is so severe as to require therapy, ACTH or cortisone should be tried if no contraindications exist.

In the patient with symptomatic hemolytic anemia, at times treatment directed at the primary disease may prove fruitful. For example, the author has rarely seen patients with lymphocytic leukemia whose hemolytic processes have decreased markedly after deep x-ray therapy. In one instance the x-rays were directed to the spleen while in another patient mediastinal and axillary lymph nodes were irradiated. Blood transfusions also were given. The second patient previously had had his spleen removed.

"Idiopathic" acquired hemolytic anemia sometimes is self-limited but occasionally requires aggressive therapy: ACTH or cortisone; at times splenectomy.

Splenectomy is not indicated when septicemia, parasitic invasion of the red cells, or chemical poisoning causes hemolytic anemia. However, in other hemolytic anemias, whenever the spleen is large and the hemolytic process fulminating, splenectomy may give dramatic results. Often, however, there is no real response. In certain patients with leukemia, when excessive hemolysis is the immediate problem, splenectomy may prove beneficial in reducing the transfusion demands. Splenectomy can be expected to give good results nearly 100% of the time only in hereditary spherocytosis; otherwise the results are variable. Splenectomy itself has a low mortality rate, but partly because of the danger of postoperative thrombotic processes, the author has been rather conservative in recommending the procedure.

For supportive therapy, blood transfusions are the mainstay. However, there is greater danger of transfusion reactions in patients with hemolytic anemia than in others. This is especially true in those who have hyperimmune bodies. With chronic hemolysis requiring repeated transfusions the danger of producing exogenous hemosiderosis is real. Therefore, to help limit the amount of blood transfused, it is best not to attempt to keep the hemoglobin higher than 10 gm. per 100 ml. of blood.

In general, iron should not be given to patients with hemolytic anemia. They are not losing iron and therefore do not need iron. Theoretically, iron therapy is objectionable because it adds to the iron stores of the body. The iron stores are increased by the iron of transfused blood cells and so iron therapy may help to produce exogenous hemosiderosis. Paroxysmal nocturnal hemoglobinuria with its consistent loss of iron (hemosiderinuria) is an exception.

Liver extract (vitamin B_{12}) is of no use in the hemolytic anemias. (Minnesota Med., Feb. 1953, P. S. Hagen)

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The Mechanism of Dust Clearance From the Lung

Most of the dust particles that lodge in an alveolus are removed by way of the ciliated epithelium of the bronchial passages. This process of removal seems generally to be efficient but evidence of inadequacy appears when the inhaled air is grossly overloaded with suspended, fine particulate matter. The dust particles that escape removal via the bronchi may cause pneumoconiosis.

Although much has been written about the mechanism of production of the pneumoconioses, little is found in the literature in regard to the mechanisms for transporting particulate matter from the respiratory membrane to the bronchiolar epithelium.

Alveolar macrophages are common to both mechanisms as the carriers of the foreign material. These cells, varying in number and distribution and containing different amounts of pigment, are frequently present in lung sections that show little indication of active inflammation. In the routine examination of lung sections the alveolar macrophages are usually dismissed as "dust cells," the cytologic response of the alveolar wall to the irritation evoked by inhaled dust particles. Such a concept, however, is not sufficiently comprehensive. It does not take into consideration the phagocytosis of endogenous materials as hemosiderin and lipids. Nor does it explain the frequently focalized distribution of alveolar macrophages or their presence in some sections containing little pigment and their absence in other sections having considerable pigment.

Based on a general impression that the distribution of alveolar macrophages followed a definite pattern, this study was undertaken to determine the relationship between this pattern and the excursionary activity of alveolar tissue.

Based on the conclusion that there is a relationship between macrophage clearance and the respiratory excursions of an alveolus, the following theory was evolved to explain how particulate matter is moved from the respiratory membrane to the ciliated epithelium.

As a premise, it may be stated that there is an uninterrupted thin film of protein-containing fluid covering the respiratory membrane from the alveolus to the alveolar duct and extending over the ciliated epithelium of the bronchiole to become continuous with the bronchiolar mucus. According to Drinker there is continuous seepage of fluid through the wall of alveolar capillaries which is regulated by a homeostatic mechanism. This seepage provides the interstitial fluid or pulmonary lymph as well as the film of fluid covering the respiratory membrane. Normally the fluid film furnishes the water vapor with which alveolar air is constantly saturated. When the homeostatic mechanism is disturbed the fluid film may become transformed into alveolar edema fluid.

Because of contracture of the surface during expiration, the film covering the respiratory membrane becomes increased in depth and is extruded so as to overlap to some extent the steadily moving (through ciliary action)

mucinous fluid covering the more rigid bronchiole. The phagocytes and extracellular dust particles adherent to this film are thereby brought nearer to the ciliated epithelium. During inspiration the surface area again increases, tending to pull the film of fluid centrifugally (toward the pleura). This tendency is opposed by the viscosity of the fluid film. The latter varies in thickness during the respiratory cycle. Just prior to inspiration the fluid film covering the respiratory membrane has attained its greatest depth because of maximal contracture of its surface. At this time it also exhibits a maximal gradient of viscosity. The viscosity is greatest at the free surface owing to constant evaporation and is least at the base because of the steady flow of fresh fluid from the alveolar wall. Thus the luminal portion of the film, containing the adherent phagocytes and extracellular dust particles, tends to move backward less freely than the subjacent, deeper portion which moves back with the expanding respiratory membrane. The net result is a tendency of entrapped particulate matter to be moved progressively toward the bronchiole with each respiration, a type of transport reminiscent of the propulsion that brings flotsam to a beach.

Any appreciable reduction in the excursions of alveolar tissue should, in conformity with this hypothesis, lead to alveolar stasis and adversely affect the dust-removal mechanism in those regions.

In a series of consecutive autopsies of 87 adult persons, 43 showed appreciable numbers of alveolar macrophages which were unrelated to active inflammation. In most instances atelectasis was the underlying cause of accumulation of macrophages. Other causes were alveolar edema, thickened alveolar walls, proximity to bronchi, vessels, or scars and no demonstrable cause. The common factor in all instances in which demonstrable causes were recognized was reduction in the excursions of alveolar tissue. (Am. J. Clin. Path., Feb. 1953, P. Gross)

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Chronic Constrictive Pericarditis and Rheumatic Heart Disease

Chronic constrictive pericarditis is a well-established clinical entity which is often amenable to surgical treatment. Its etiology is frequently obscure and its manifestations confusing. While the diagnosis of this condition may be quite simple in the presence of the classical findings, many cases are improperly diagnosed as tuberculous peritonitis, portal cirrhosis of the liver, valvular heart disease, or ascites of unknown origin. Confusion arises especially when the heart is not small, the sounds are not quiet, and the pulsations not appreciably diminished. When constrictive pericarditis is associated with other forms of heart disease, the disease may be readily overlooked. Because constrictive pericarditis is a surgically remediable condition, the importance of its recognition is apparent. A proper awareness

of the less typical aspects of this condition will result in the discovery of many more cases.

In the authors' experience one of the most difficult diagnostic problems was the coexistence of constrictive pericarditis and rheumatic heart disease. In a series of 18 cases of constrictive pericarditis at the Veterans Administration Hospital, Bronx, N. Y., all proved by operation or autopsy, there were 5 with rheumatic heart disease. Three additional patients (of the 18) had a history of recurrent rheumatic fever but no objective evidence of valvular heart disease. Of the remaining 10 cases, 2 were due to tuberculosis, 1 secondary to a foreign body, and the others were of unknown etiology. The 5 cases associated with rheumatic heart disease are reported in detail.

In a series of 61 cases of constrictive pericarditis, 10 had a past history of rheumatic fever. In only 1 could this have been an etiologic factor, and the authors thought it coincidental. Harrington found an even smaller incidence of rheumatic disease. Only 1 of his patients had a rheumatic history and in this patient the pericarditis was proved tuberculous. Others report similar findings.

In 6,100 routine autopsies Sprague and associates found only 6 cases of adherent pericardium without valvular disease in patients with a rheumatic history. None of these had evidence of Pick's disease. Mortensen and Warburg thought that the earlier view that rheumatic fever was frequent in this disease was due to the lack of distinction made between pericarditis in general and the constrictive forms. They presented the view that a history of rheumatic fever makes the diagnosis of constrictive pericarditis doubtful. Harrison and White mentioned a follow-up of 1,500 cases of rheumatic fever at the House of the Good Samaritan in Boston by Dr. E. F. Bland which revealed no cases of chronic constrictive pericarditis.

The classical signs and symptoms of constrictive pericarditis, dyspnea, ascites, edema, elevated venous pressure, together with low voltage and primary T-wave changes in the electrocardiogram, have recently been adequately reviewed.

There is a prevailing impression that the heart in constrictive pericarditis is small and quiet. The authors' experience with this disease suggested that the size of the heart and loudness of the heart sounds should play no role in exclusion of the diagnosis of constriction. It should also be emphasized that the amplitude of cardiac pulsations may be within normal limits in the presence of this disease.

It has been suggested that the absence of other types of heart disease is a valuable clue in arriving at a diagnosis of constrictive pericarditis. The evidence submitted in this study should serve to emphasize that the converse is not true and that constrictive pericarditis may well accompany other forms of heart disease. If this fact is borne in mind, more cases of this surgically remediable condition will be discovered.

Although the authors cannot implicate rheumatic disease as an etiologic factor, their experience has indicated that in the patient with valvular heart disease, constrictive pericarditis can and does occur. (Am. Heart J., Feb. 1953, A. J. Kaltman, J. B. Schwedel, and B. Straus)

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Serum Quinidine Concentration in Congestive Heart Failure

The use of quinidine to convert auricular fibrillation to normal sinus rhythm has been the subject of a number of articles within the past few years. Although treatment directed toward the relief of concomitant congestive heart failure generally preceded the administration of quinidine, a substantial number of patients developed one or more manifestations of quinidine toxicity. In a group of 6 patients recently reported who developed ventricular tachycardia following the use of quinidine, 4 had recently or incompletely recovered from congestive failure. It, therefore, seemed important to determine whether the levels of quinidine achieved in the blood following the oral administration of quinidine sulfate in patients with congestive failure differed from those occurring in normal persons.

In general the patients with congestive failure showed higher serum levels at the end of 12 hours than did the control subjects, although the time of appearance in the blood stream and the peak level did not differ significantly from the latter. This suggests that the rate of disappearance was slower in the patients with failure.

The recognition that patients with failure will show considerable delay in lowering of the blood quinidine level is of great importance in the continued administration of this drug. Unusually high serum levels and serious toxicity can occur in these patients. If this hazard is to be avoided, patients with failure should be given quinidine with caution and continued administration should be controlled by serum quinidine determinations. (Am. J. M. Sc., Feb. 1953, M. G. Brown, D. Holzman, and E. W. Creelman)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Navy Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps, and old and new addresses.

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Use of Streptokinase and Streptodornase in Slowly Resolving Pneumonia

This article presents the case histories of 2 patients who had slowly resolving pneumonia and who were treated by the intrabronchial administration of Streptokinase and Streptodornase. The following method appeared to be satisfactory. At the conclusion of the routine diagnostic bronchoscopy, the patient was placed so that the diseased pulmonary tissue was dependent. A catheter was passed through the bronchoscope and the enzymes injected. The bronchoscope and catheter were withdrawn and the patient requested to maintain the position for 4 hours if possible. Subsequent therapy was given through a catheter passed into the bronchial tree. Postural drainage with the affected area uppermost was performed 4 times a day. The necessary position was achieved with a bed board and a Gatch bed.

Bronchoscopic examination should always precede the use of Streptokinase and Streptodornase, because a bronchogenic carcinoma, which could cause the pulmonary infiltration and atelectasis, might be detected. Furthermore, the mechanical removal of purulent exudate by aspiration at the time of bronchoscopy is a definite, although at times temporary, help in the treatment of atelectasis.

The intrabronchial instillation of Streptokinase and Streptodornase is contraindicated in the presence of active pulmonary tuberculosis to avoid possible bronchogenic spread of the disease. All examinations possible to eliminate the presence of tuberculosis should be done before treatment is started.

The use of these agents in the presence of undiagnosed carcinoma with negative bronchoscopy might be an advantage in diagnosis. The loosening of plugs of cellular debris from terminal bronchioles and the influx of serum provide large quantities of sputum for direct examination for tumor cells. This material is similar to that obtained by bronchial washing at the time of bronchoscopy. Repeated examinations of bronchial exudate may thus be made without additional bronchoscopy. (Dis. Chest., Feb. 1953, J. M. Miller, J. A. Surmonte, and P. H. Long)

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Diagnosis and Complications of Amebic Infection of the Liver

Early diagnosis of amebic hepatitis and hepatic abscess offers a challenge in view of good results obtained with medical treatment prior to the development of serious complications. Five cases are presented, illustrating the difficulties and problems in diagnosis and the complications which occurred.

Two patients had amebic hepatitis and 3 amebic hepatic abscess. Three patients contracted their infection outside the United States during World War II. Approximately 3 to 7 years elapsed before hepatic involvement was dis-

covered in 4 of the 5 patients. In only 1 patient was a diagnosis of amebiasis made prior to admission. One patient gave a history of recent diarrhea. Endamoeba histolytica was not recovered from any patient although numerous stool examinations were made. Kidney aspiration was performed on 2 patients, suspected of having a perinephritic abscess, 1 of whom showed displacement of the right kidney with distortion of the calices on pyelographic study. Pyelographic distortion produced by an hepatic abscess has been reported. Case 4 had an exploratory laparotomy with a preoperative diagnosis of abdominal carcinoma or hepatoma. Case 5 required a lobectomy for residual pulmonary involvement long after rupture of an abscess into his right lung. Shaw has emphasized the importance of more definitive surgical therapy including lobectomy and segmental resection in certain forms of pulmonary complications of amebic hepatic abscess.

Treatment with emetine hydrochloride yielded spectacular results in those patients without a serious complication. It is believed that emetine hydrochloride should be given as a therapeutic test for amebic infection to patients who, recently, or in past years, have had diarrhea, especially in areas where amebiasis is endemic, and who complain of right abdominal and/or right lower chest pain, have fever, hepatomegalia, leukocytosis, with or without alterations of the right side of the diaphragm. The therapeutic test with emetine has been advocated. No significant reactions or electrocardiographic alterations occurred with emetine, 1 grain subcutaneously, daily for 10 days.

Diarrhea need not be present. A history of diarrhea in previous years may not be elicited from the patient despite repeated questioning. Liver function tests were not helpful in establishing diagnosis. Complement-fixation tests for amebiasis are advocated early during hospitalization. In the authors' cases, because of the necessary lapse of time between sending blood samples to the Army Medical Center, Washington, D. C., and receiving reports of the complement-fixation tests, it was not of practical importance as an aid in instituting emetine therapy. It helped substantiate the diagnosis although the therapeutic response to emetine was conclusive in uncomplicated cases. Bargen has stressed that the complement-fixation test for amebiasis as performed by the National Institute of Health, the Army Medical Center, and the Communicable Disease Center, Washington, D. C., is a useful adjunct in the diagnosis of extracolonic lesions. The importance of repeated x-rays and fluoroscopic examinations cannot be overemphasized as no alterations of the right side of the diaphragm may be present initially. Should an inadequate therapeutic response in treatment with emetine hydrochloride occur and an abscess cannot be discovered with aspiration, surgical intervention is almost mandatory in order to prevent rupture. Administration of antibiotics diminishes the incidence of secondary infection, a serious complication prior to the antibiotic era. (Am. J. Digest. Dis., Feb. 1953, D. Givner and D. J. Chang)

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Homologous Arterial Grafts and Autogenous Vein Grafts in Man

Following the outbreak of hostilities in Korea, a large number of the wounded with vascular injuries have been admitted to the Army Vascular Center at Walter Reed Army Hospital. A report on the management of 101 such cases was made in October 1951. At that time it was reported that arterial continuity had been successfully re-established in 54.7% of the major vessels with only 1 technical failure. Since 1 Jan 1951, it has been the authors' policy to re-establish the continuity of all major arteries, either by suture anastomosis of the damaged artery, or, if the defect by virtue of its size precluded approximation of the vessel, a graft was used to bridge the defect. Of 56 major vessels operated upon during this period, vascular continuity was re-established in 55 or 98.2%. It has long been established that homologous arterial grafts and autogenous vein grafts can be successfully used and will be initially effective in restoring vascular continuity. The fate of such grafts, however, has been a controversial subject. This article reports the initial results and early follow-up on the cases in which vascular grafts were used in Korean war wounded.

As previously reported, it is the authors' policy, whenever possible, to delay definitive surgery 3 months from the time of wounding to allow collateral circulation to adjust to the increased demands. In most cases, collateral circulation was shown by the reactive hyperemia test to be sufficient to maintain viability of the extremity should the vessels at the site of injury be completely occluded. This allowed a margin of safety should thrombosis and occlusion occur at the operative site.

Five of the grafts used were homologous arterial grafts from the Walter Reed artery bank, and 9 were autogenous vein grafts taken at the time of surgery. Of the 5 cases in which preserved homologous arterial grafts were used, occlusive changes occurred in 2.

Fourteen cases of traumatic aneurysms and arteriovenous fistulas of major vessels are presented in which vascular continuity could not have been re-established by suture repair or direct anastomosis. Homologous arterial grafts were used to bridge the arterial defect in 5 cases. Occlusive changes occurred at the graft site in 2 of these cases, 1 after 4 months and the other after 7 months. Autogenous vein grafts were used in 9 of the 14 cases. At the present time 8 autogenous grafts appear to be functioning well; 1 graft thrombosed following a severe postoperative infection.

It is admitted that the evidence as to the adequacy of function in all cases is not incontrovertible. The period of follow-up is relatively short, the longest being only 12 months. However, the authors believe that, excluding the aorta, the use of autogenous vein grafts offers the best method of restoring the continuity of major arteries in which large defects exist. (Surgery, Feb. 1953, F. N. Cooke, Lt. Col. C. W. Hughes, MC, USA, Capt. E. J. Jahnke, USAF (MC), and Brig. Gen. S. F. Seeley, MC, USA)

Electrocardiographic Studies During Cardiac Surgery

There are many excellent observations concerning cardiac mechanisms during anesthesia and surgery but few on the behavior of the heart during cardiac and cardiovascular surgery. This report is a record of the behavior of the heart in 4 common types of surgical procedures: ligation or section of a patent ductus arteriosus, resection of the aorta in coarctation, increasing pulmonary artery blood flow in congenital cyanotic heart disease, and resection of pericardial scar in Pick's disease. The incidence and nature of operative complications are evaluated. Prevention and control of disturbances of cardiac mechanism are discussed.

This study is of 100 patients, operated upon by Dr. Claude S. Beck. Forty-five patients had section or ligation of a patent ductus arteriosus. Eight had surgical correction of coarctation of the aorta. Twenty had resection of pericardial scars due to chronic cardiac compression. Twenty-seven had operations designed to increase the pulmonary artery blood flow either by the Blalock-Taussig or by the Potts procedure.

In all cases a medical cardiologist was present throughout the operation. The observer took frequent records and, in addition, watched the electrocardiogram. Changes in the electrocardiogram were correlated with direct observation of the heart, level of the blood pressure and anesthesia, and the operative procedure. All of the patients had preoperative and posoperative electrocardiographic studies.

The preoperative medication was the same in all groups. This consisted of morphine or codeine and atropine. Congestive failure, if present, was treated. Auricular fibrillation or flutter, if present, was controlled by adequate digitalization. Anesthesia was induced by nitrous oxide or Vinethene in all patients except where cyclopropane was used. Ether was employed for maintenance of anesthesia. The Rand positive pressure respirator was employed with intratracheal intubation in all patients.

Arrhythmias observed during cardiac operations are usually unrelated to the cardiac operative procedure, but are related to the type and level of anesthesia, hypoxia, and reflexes mediated through the vagus. The incidence of arrhythmias in surgery of the heart is about the same as that encountered in thoracic surgery in general. Ventricular fibrillation and cardiac standstill occurred in 8 cases. Restoration of cardiac mechanism was affected in 6 with survival of 2 patients.

Displacement of the T_A and S-T segments occurred frequently in all groups, with depression in leads II, III, aV_F, and elevation in aV_R. These deviations were thought to be due to changes in the dynamics of the right side of the heart incident to anesthesia and to hypoxia.

There were few significant changes during anesthesia and operation for coarctation of the aorta and for patent ductus arteriosus. Ventricular premature beats, singly or in runs, were related to cardiac manipulation, traction, and resection of pericardial scars. More serious complications occurred in the congenital cyanotic group. The incidence of complications decreased when cyclopropane was replaced by ether.

Rest periods during the operation, reinflation of the lungs, and atropine are important in the prevention of serious complications. The recording and observation of continuous electrocardiograms should be supplemented by direct observation of the heart itself. (Circulation, Feb. 1953, Cdr. E. J. Jaruszewski, MC, USN, H. K. Hellerstein, and H. Feil)

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The Patent Ductus

The ductus arteriosus with or without symptoms should be closed by operation if it remains patent beyond the age of 5, to avoid the hazards of retarded physical development, cardiac decompensation, or bacterial endocarditis.

A patent ductus is in effect an arteriovenous fistula within the heart and has the same effects upon the circulation as a peripheral arteriovenous fistula including increased cardiac output, limited in the case of a ductus to one-half of the heart, increased blood volume, reduced blood pressure, particularly diastolic pressure, cardiac dilatation, and eventually decompensation.

Cardiac failure may occur at an early age if the ductus is large and easily distensible. As the child with a patent ductus grows the lower resistance imposed by the pulmonary circulation as compared with that of the systemic circulation will attract a progressively greater volume of blood into the shorter circuit, resulting in progressive dilatation of this shorter circuit including the ductus and the left side of the heart. This progressively increasing blood flow through the shorter circuit is limited by two factors, the innate rigidity of the ductal wall itself and the increasing fibrosis of the pulmonary capillaries incident to their connection with the high pressure of the systemic circulation. These two factors diminish the difference in the resistances of the two systems and reduce, and may even abolish, the tendency for an increasing volume of blood to flow through the ductus, the effects of which then remain stationary. Both factors are operative in delaying the appearance of cardiac symptoms to adulthood, but the appearance of cardiac symptoms is inevitable if a difference in the resistances of the two systems persists, if the ductus remains open, and if its walls remain distensible.

Bacterial endocarditis and endarteritis which was cured by ligation of the ductus occurred in 1 patient at the early age of 7. Aneurysm of the ductus occurred in another patient of 11 years whose ductus had been ligated twice previously and was accompanied by bacteremia completely resistant to all antibiotics. Division of the ductus at the site of the aneurysm resulted in immediate disappearance of the bacteremia and complete cure.

In another patient, 14 years of age, an aneurysm of the pulmonary artery opposite the entrance of the ductus followed bacterial endarteritis for

which 992 injections of penicillin had been given with control of the bacteremia. Ligation of the ductus and wrapping of the aneurysm with Cellophane has halted the aneurysmal process.

Twins, 3-1/2 years old, showed about the same clinical response to patent ductus both before and after an operation in the course of which remarkably similar ductus in shape and size were found. The circulatory effects of one ductus were slightly more pronounced as shown by a larger heart and a lower diastolic pressure. At operation this ductus measured 1 mm. larger in diameter at both the aortic and pulmonic ends.

One patient, cyanotic in life, was not operated upon because of a mistaken diagnosis, and she died of cardiac failure at the age of 16 years. Necropsy revealed evidence that the flow of blood through the ductus throughout life had been from pulmonary artery to aorta with an excessive development of the right side of the heart as compared with the left. It is questionable if the patient could have survived ligation of the ductus at this age because of the preponderant hypertrophy of the right side of the heart. Recognition of this condition in infancy would have permitted permanent correction by operation.

A woman, 26 years of age, with a known patent ductus but without serious symptoms for many years, became pregnant. At the end of about a month, increasing dyspnea and easy fatigability made division of the ductus mandatory, all cardiac symptoms were thereby eliminated. This experience provides added support for early operative closure of a ductus no matter how symptomless it may be in childhood.

Thoracotomy was performed on 5 patients with all the signs and symptoms of patent ductus, but no ductus was found. One patient, a married woman, 25 years of age, died following thoracotomy with advanced signs of bacterial endocarditis. At necropsy, a high interventricular septal defect with an aneurysm of the sinus of Valsalva communicating with the pulmonary artery, complicated by the extensive vegetations of bacterial endocarditis, was found. The other 4 patients recovered without accentuation of symptoms and were presumed to have aortic-pulmonic septal defects or high interventricular septal defects involving both aorta and pulmonary artery.

Eight patients with patent ductus were treated by division and 67 by multiple ligation in continuity. The first ductus operated upon recurred following ligation with one ligature, and 1 ductus recurred following triple ligation with the formation of an aneurysm. Both patients were cured, the first by religation, the second by division of the ductus at the site of the aneurysm. One death, in 75 cases, occurred on the third day following operation for division of the ductus because of complete anuria incident to blood transfusion. (J. Thoracic Surg., Feb. 1953, E. Holman, F. Gerbode, and A. Purdy)

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The Clinical Prognosis in Testicular Tumors

Many excellent reviews of testicular tumor as well as methods of treatment have appeared in the literature. From these reports the general opinion at present is that the prognosis in testicular tumors depends upon cell type and the use or lack of x-ray therapy. Barringer stated that the prognosis depended upon (1) pathologic examination of the tumor, (2) determination of involvement of the cord, (3) physical examination of the patient, (4) distribution of lymph stream involvement, and (5) a thorough knowledge of autopsy material.

Belt found that early diagnosis was essential for a good prognosis in testicular tumors. More than one-half of his cases who had had symptoms for more than 5 months had metastasis. Sixty-five percent with a history of 3 months or less were well for at least 3 years. He also found that the prognosis depended on the presence or absence of metastasis and the radiosensitivity of the tumor.

Hinman summarized the prognosis in testicular tumors as: (1) Good: The patient is physically fit, there are no demonstrable metastases and the hormone has disappeared from the urine; (2) Fair: The patient is in good physical condition and the structure of the tumor indicates that it will respond well to x-ray therapy. However, metastases have appeared and the hormone persists even though low and diminishing under irradiation; and (3) Poor: The patient is losing ground physically; metastases resist treatment or rapidly recur and the hormone in the urine is little affected or even increases under radiation.

Desjardins, studying the importance of the retroperitoneal lymph nodes in relation to malignancy, noted significant symptomatology connotating a poor prognosis. Pain in the back and abdomen, bloating, belching after meals, abdominal distention, increase in flatus, a sensation of undue fullness after eating, gradual increase in size of the abdomen, and constipation were indicative of metastasis to the retroperitoneal nodes.

Randall used the excretory urogram as a prognostic test with x-ray-treated recurrent abdominal masses. Nonfunctioning kidneys due to obstruction by metastatic masses showed return of function and essentially normal pyelograms in those patients showing a good response to therapy.

Pendergass evaluated two points in the history when he noted that lumbar pain and abdominal cramps with gastrointestinal disorders were bad prognostic symptoms.

Gilbert in studying 7,000 case reports of testicular tumors, stated that 1.5% occurred in testicles of normal size or smaller. This did not, however, have any relationship to the prognosis, malignancy of the tumor, or the presence or absence of metastasis. He noted a high incidence of chorio-epithelioma-tous tissue with atrophy (8 of 46 cases). This later statement certainly would appear to be contrary to the previous one because the prognosis of chorio-epitheliomas is extremely poor.

Although the incidence of trauma in relation to tumors of the testis is quoted by various authors as varying between 10 and 30%, no mention is made of its relation to prognosis.

Although the truth of these opinions is not in any way contended, it is believed that in applying them to any one case, many other modifying factors seem to be present. It was with the idea of analyzing these factors in relation to the prognosis of testicular tumors that this study was undertaken. An attempt was made to analyze the prognosis in relation to the various points noted in the history, physical findings, laboratory findings, and treatment.

It is always difficult in any isolated instance of a malignant growth to give a prognosis unless all the factors concerned are evaluated. Although it is true that a seminoma of the testis on the average has a much better prognosis than other types, the author believes that in an individual case the various points in the history, physical findings, and the laboratory studies when coordinated will offer a better guide to the prognosis of the patient being evaluated. Surgical extirpation and adequate x-ray therapy when reviewed in relation to the other symptoms and findings have been tabulated. Examination of these points shows that some of them are common to tumors in general; namely pain, weight loss, metastatic involvement, and rapid growth of the tumor. Others, however, are peculiar to testicular tumors; namely the chief complaint and history of injury, type of tumor (not grade of malignancy), contour of tumor, and the Aschheim-Zondek test. While the use of x-ray therapy in increasing greatly the time of survival in malignant disease is not confined to testicular tumors, it is of such major importance in the consideration of the prognosis of testicular tumors that the lack of its use today is unpardonable. Of the 11 patients who have now survived more than 5 years, 8 received x-ray therapy and 3 did not. It is interesting to note that 6 were embryonic carcinomas, 3 were seminomas, and 2 were terato-carcinomas, 26%, 26%, and 25% respectively of the total number of each type in those classifications. (J. Urol., Feb. 1953, H. T. Thompson)

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Segmental Resection

A series of 130 patients who had excisional operations for pulmonary tuberculosis at the U. S. Naval Hospital, St. Albans, N. Y., during the past 4 years is reported. Seventeen patients (13.1%) underwent pneumonectomy; lobectomy was performed in 25 instances (19.2%); and 88 patients (67.7%) were treated by segmental resection. Detailed consideration is given only to those patients who underwent segmental resection.

The extent of operation, the operative and postoperative complications, and the present status of the patients treated by segmental resection were carefully analyzed. There were 3 deaths (3.4%). Two patients (2.3%) died in the hospital, and in neither case was the death directly attributable to tuberculosis or to the type of operation performed. One patient (1.1%) died of an anesthetic accident, and the other hospital death (1.1%) was due

to lower nephron nephrosis, possibly the result of a transfusion reaction. The third death occurred long after the patient's discharge. This fatality apparently resulted from an unrelated cause; the tuberculosis appeared to be arrested at the time of death.

The percentage of major complications was 13.5%, although the percentage of patients with major complications was much smaller. Bronchopleural fistulas occurred in 4.5%, spread in 3.4%, and reactivations in 3.4%. There was 1 case of fatal lower nephron nephrosis and 1 of nonfatal cardiac arrest.

Minor complications totaled 27.1%. The most frequently encountered minor complications were: localized apical pneumothorax (9%), persistent air leak (8%), and atelectasis (5.7%). There was 1 case each of hemothorax, thrombophlebitis, parotitis, and trochanteric bursitis.

At the time of writing, 4 of 84 surviving patients (4.8%) had "positive" sputum while the sputum on culture gave negative results in the remainder. Of the 4 patients with positive results, 2 had bilateral disease and each had had a contralateral thoracoplasty. The authenticity of the single result from a sputum culture in 1 case is doubted, and detailed and prolonged hospital investigation of the remaining patient failed to establish the source of the intermittently positive results of his sputum cultures.

Twenty-five patients (28.7%) remain in the hospital. Thirty-eight (64.4%) of the 59 discharged patients who survived were gainfully employed. Three were readmitted because of positive sputum cultures, and 1 had a myocardial infarction, prior to which he was working full time. Sixteen other discharged patients (27.1%) were clinically well and apparently able to work but were advised, as a precautionary measure, not to do so for a while. The work status of 1 additional patient was not ascertained, but because he had normal sputum and was clinically well, it may be assumed that he, too, was able to work. Thus, 93.2% of the surviving discharged patients, or 91.7% of all discharged patients, were considered physically fit for employment.

Segmental resection is a useful addition to the surgical methods employed in the treatment of pulmonary tuberculosis. Careful case selection, patient and wise preoperative preparation, accurate timing of the surgical procedure, skillful surgical technic, and meticulous attention to the details of postoperative care are mandatory if the desired results are to be accomplished. When these tenets are adhered to strictly, a high percentage of successes can be anticipated. All surgical treatment of tuberculosis requires a thoughtful attitude and painstaking work on the part of the responsible surgeon if a successful outcome is to be achieved, and segmental resection is no exception to this rule. (J. Internat. Coll. Surgeons., Jan. 1953, Capt. C. F. Storey, MC, USN, and Lt. B. F. Rothmann, MC, USNR)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

Diagnosis of Pulmonary Metastases

The radiographic recognition of pulmonary metastases is not without difficulty. In a previous report the authors discussed various benign diseases of the lungs which so closely resemble malignant pulmonary metastases that only serial chest films or microscopic examination of the tissue could establish the correct diagnosis. They also pointed out the difficulty of distinguishing primary bronchogenic carcinoma from a solitary metastatic tumor. Often pulmonary metastases may be silent, producing no serious respiratory symptoms, and the primary tumor may remain obscure even after exhaustive clinical examination. From the statistical study of 105 cases of pulmonary metastases reported here, certain information of practical diagnostic importance has been derived.

The cases selected were not in consecutive order, because an effort was made to confine the series to cases in which diagnosis had been established by tissue examination. In only a few examples, in which the clinical diagnosis was well defined, is microscopic confirmation lacking.

In a total of 105 cases there were 56 female and 49 male patients. The more frequent occurrence of pulmonary metastases in the female can be attributed to two factors; the high incidence of cancer in the female breast and its tendency to metastasize to the lungs. The difference between white and colored patients is probably insignificant and is fairly representative of the ratio in the hospital bed population. The youngest patient was 18 months of age and the oldest 79 years. Thus pulmonary metastases may be found at any age, although the incidence rises sharply after 40 years and is highest in the group of 60 years or older. While any type of malignant growth may develop in the earlier decades, certain age groups are significant. In children up to 7 years of age the neuroblastoma and Wilms' tumor are by far the most common and these should receive first consideration. In the teen-age group, primary malignant bone tumors and lymphoblastoma become more common. In the third decade of life testicular tumors, malignant melanoma, Hodgkin's disease, and soft-tissue sarcomas make up the greater percentage of primary cancer. Only 10% of carcinomas of the female breast occur before the age of 40.

This study resulted in the following impressions: A roentgen diagnosis of pulmonary metastases may be difficult or impossible in certain cases. Serial films taken at intervals may be helpful, in some instances biopsy of available tissue may be necessary to establish the diagnosis. The appearance and configuration of the pulmonary lesions in these cases offer little aid in determining the site of the primary disease. The authors' efforts to recognize the lymphangitic type of metastasis have been poorly rewarded. In those patients suspected of having pulmonary metastases, where the original lesion remains silent or obscure, the organs most likely to be involved should be investigated first. The genitourinary tract is a fertile field for such investigation. In this series it accounted for 40% of the cases. The

age of the patient may also be of some assistance and may furnish a clue as to what organs should be examined first. With our present knowledge, the origin of pulmonary metastases will remain unsolved in a certain percentage of cases even after a thorough clinical investigation and exhaustive necropsy. This is especially true in those cases with widespread metastatic deposits or when the cell type is highly undifferentiated. Because cancer of any organ may produce pulmonary metastases, follow-up studies should always include interval films of the lungs as part of the examination, especially in the presence of respiratory symptoms. An exception to this rule is skin cancer. Although pulmonary metastases may be found in any age group, the highest incidence in this series was in persons over 60 years of age. (Radiology, Feb. 1953, P. E. Russo and C. J. Cavanaugh)

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Surgical Management of Papillary Carcinoma of the Thyroid Gland

During the past 6 years the authors' experience with a relatively small series of papillary carcinomas of the thyroid has indicated the desirability of some modification in the surgical management of this disease. The variable natural history of this most important form of thyroid cancer includes such vagaries as multiple foci of intraglandular neoplasm and local dissemination to contralateral and upper cervical lymph nodes. This report summarizes the authors' clinical experience with this neoplasm, reviews the lymphatic routes of its spread, and outlines the present surgical management, both of undiagnosed thyroid nodules, and of papillary carcinoma with and without recognizable regional metastases.

The authors' experience indicated that the following outline represents a more reasonable approach to the management of goiter in which cancer may be found.

1. A thyroid tumor is present with no clinical evidence of lymphadenopathy. In such a situation, excision of the tumor with a reasonable margin of adjacent thyroid tissue is done and, if a pathologist who is highly competent in rapid frozen section technic is available, an immediate diagnosis can usually be made. Lacking a rapid frozen section, or if the frozen section is equivocal, further action is deferred pending diagnosis by paraffin sections which should be available in 24 to 48 hours. If the lesion is carcinomatous, an extracapsular total thyroidectomy is done with a regional dissection in the thyroid area, from internal jugular to internal jugular. If parathyroid bodies are found in the specimen, they are implanted in muscle tissue.

2. There are evident lateral node metastases, with or without an apparent primary lesion in the thyroid gland. Either needle biopsy or surgical exposure, and rapid frozen section or formal biopsy are done on a specimen from one of the involved nodes. If metastatic papillary carcinoma of thyroid origin is demonstrated, and if there is unilateral cervical node involvement,

radical block dissection of the neck is done on the involved side, with resection of the sternocleidomastoid muscle and internal jugular vein, the dissection including the entire anterolateral triangle of the neck, with the exception of the submaxillary area, and including also the adjacent portion of the posterior cervical triangle, particularly in its lower third. The operation is completed by a total extracapsular thyroidectomy, and dissection of the adjacent nodes on the contralateral side as far as the opposite carotid sheath. (Ann. Surg., Feb. 1953, I. MacDonald and P. Kotin)

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The Ebb and Flood of the Eosinophils in the Burned Patient

In recent surgical literature, attention has been called repeatedly to the drop in circulating eosinophils which occurs immediately following operations and other types of surgical stress. The number of burned patients studied has been limited, however, and insufficient attention has been paid to the resurgence of the eosinophils during the weeks and months of infection, wound healing, and convalescence. It is common knowledge that the eosinophil count may rise to high levels in Addison's disease, allergic reactions, myelogenous leukemia, Hodgkin's disease, and in parasitic infestations, to name only a few conditions with which eosinophilia may be associated. To these the authors add the later phase of infection, wound healing, and convalescence from extensive burns.

This report is based upon studies made in 31 burned patients admitted to the Massachusetts General Hospital since 1950. Twenty-two were admitted the day of injury and studied from the outset. Five patients were not transferred to this hospital until several days or weeks postburn. They were followed from the time of admission. In the other 4 cases, although admission was prompt, eosinophil counting was deferred. Two were placed under study within 72 hours, 1 within 12 days, and the last not until the fifty-fourth day following the burn. The extent of the burns ranged from 2 to 68% of the body surface; from 0 to 30% being of third degree. Two-thirds of the patients were males. The ages ranged from 2 to 87 years. Ten patients, 4 of them women, died.

A prompt drop in the number of eosinophils in the circulating blood is to be expected immediately following burn trauma. In 21 of 22 patients in whom eosinophils were counted during the initial 12 hours postburn, the number was below normal. The level to which the eosinophil count descends does not correlate with the extent of the burn, except in minor injuries. The count in patients with moderate burns may drop maximally, as it does in the extensively burned. There may be little or no eosinopenia in patients with minor burns.

In patients showing satisfactory clinical progress, a rising eosinophil count appears by the third postburn day. The rapidity of the rise is not

necessarily related to the extent of the burn, for it may be retarded by infection and operative procedures. Failure of reappearance of eosinophils by the third day postburn is a grave prognostic sign. Eight out of twenty-nine patients failed to show a rise above 33 eosinophils per cu. mm. in the first week. All 8 died.

Secondary falls in eosinophil count are to be expected following burn dressings and skin grafting operations. Falls are reported after such procedures in 7 cases. A secondary fall in eosinophils unexplained by a recent surgical procedure heralded the development of a complication in 3 patients. In 2, it was associated with an aggravation of sepsis and in the third, renal failure with subsequent death; the ninth death in the series. Thus failure of reappearance of eosinophils, or persistence of a low count after operation or a complication, suggests poor tolerance to the existing stress and warns against infliction of an additional major operation.

A flood tide of eosinophils, counts ranging from 400 to 2,000 is to be expected during the later weeks or months in extensively burned patients making satisfactory progress. The absence of the flood tide of eosinophils in the extensively burned patient during the second, third, or fourth months postburn may have grave significance.

ACTH or cortisone alter the expected eosinophil pattern. In 2 patients receiving one or the other hormone, the expected rise of eosinophils from the initial low levels was postponed, but not prevented.

The eosinophil count bears no consistent relation to the total leukocyte count. (Ann. Surg., Feb. 1953, A. Wight, J. W. Raker, W. R. Merrington, and O. Cope)

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Surgical Procedure for the Lower Implant Denture

Since the year 1565 when Petronius is recorded as proposing the use of gold for repairing cleft palates, innumerable attempts have been made at implantation of metals and alloys into living tissue with various degrees of success. Interest in this technique continues and with experimentation the implant technique has improved until it is an accepted dental procedure in specified cases. This article presents a step-by-step technique for a lower denture implantation in which two surgical operations are included in completing the procedure.

The actual implantation of the lower implant denture may be successfully completed by taking an impression of the bone and performing a second operation to insert the implant. This technique may be accomplished with a minimum of risk provided the appliance is in close contact with the bone and sound surgical judgment is used in the preoperative, operative, and postoperative procedures.

Possible postoperative conditions are: Swelling of a transient nature which usually lasts 1 to 3 days. If severe, treat with 500 cc., 1/10 of 1% procaine every 3 hours intravenously. Discomfort which may be experienced the first and second day after implantation. Mild discomfort may be experienced on the third day. The sutures may pull through the tissue and part of the implant may be visible. Relapse of tissue should not give concern. Keep the alloy clean and apply tincture of benzoin over the surrounding soft tissues and the implant. If the implant is overextended to the lingual, it will work through the soft tissue. If the implant is placed on a ridge that is too sensitive, it may work through the soft tissue. Penicillin reactions, if allergic, may cause an edematous condition, resulting in exposure of the implant. (a) In cases of mild reaction, treat with antihistamines. (b) In severe cases, treat with cortisone under medical supervision in the following dosage: 100 mg. every 8 hours for 3 doses; 100 mg. every 12 hours for 2 doses; 100 mg. daily. The screws may be exfoliated. The screws are not important a month after implantation. The use of screws may be compared to that of sutures; they are not needed after healing takes place. The removal of the screws is a simple procedure which may be completed without anesthesia. Tissue will fill in the space occupied by the screws. If the implant is not in close proximity to the bone, it may work through the tissue. Should ecchymosis develop it may be treated with 1cc. of water-soluble extract of corpus luteum or koagamin, 2 cc. every 3 hours intramuscularly. Resorption of bone under the implant is of no immediate concern provided the implant is entire encapsulated. (Dental Digest, Feb. 1953, W. S. Paullus and J. T. Gordon)

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Postgraduate Training in Preventive Medicine

Medical officers of the Regular Navy, Lieutenant Commander or below, who have had sea or foreign duty and who desire a career in preventive medicine are invited to make immediate application for 1 academic year of postgraduate training beginning in September 1953 or early October 1953 in an accredited school of Public Health leading to the degree of Master of Public Health and satisfying the academic requirements of the American Board of Preventive Medicine, Inc. Applications should be forwarded as soon as possible to the Chief of the Bureau of Medicine and Surgery, via the commanding officer, making reference to this article, and should be accompanied by an appropriate obligated service agreement.

There is a need for medical officers trained in epidemiology which is the basic discipline of preventive medicine, and which deals with the determination of causes of disease or disability in populations and with the designing and application of preventive or control measures or measures for the

promotion of health. Opportunity is afforded at several schools of Public Health to include training in industrial medicine as a minor field of instruction concomitantly with the epidemiology major.

Among the interesting assignments available to young medical officers who successfully complete the course are: (1) preventive medicine units, ashore, and fleet epidemic disease control units at sea; (2) medical research units; (3) preventive medicine duties on bureau, district, fleet, and type command staffs; (4) special epidemiologic field and laboratory investigations or research; and (5) in various naval schools as instructors in such subjects as epidemiology, environmental health, preventive medicine, and related laboratory sciences. For those who minor in industrial medicine, there are numerous opportunities for assignment as industrial medical officers.

The broad knowledge and experience to be gained in a successful career in epidemiology and occupational medicine in the Navy provides outstanding preparation for the administrative responsibilities to be assumed with advancement in rank through the senior grades.

The courses are to be given at the School of Public Health, Harvard University, Boston, Mass.; School of Public Health, Pittsburgh University, Pittsburgh, Pa.; School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.; and at several other accredited schools of Public Health. (ProfDiv, BuMed)

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Subscriptions to the U. S. Armed Forces Medical Journal

Medical Service Corps officers on active duty who wish to receive the Journal may have their names added to the mailing list by addressing a request to the Bureau of Medicine and Surgery, Attention Code 26.

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1953 Session of the Trudeau School of Tuberculosis

The Trudeau School of Tuberculosis has announced that its thirty-ninth annual session will be held at Saranac Lake, N. Y., from 1-27 June 1953. The subject matter will cover all aspects of pulmonary tuberculosis and also certain phases of other chronic chest diseases, including those of occupational origin.

Medical officers who desire to attend the session under the auspices of the Navy Graduate Training Program may submit requests via official channels to the Chief of the Bureau of Medicine and Surgery. The $100.00 tuition fee for officers approved to attend the session will be borne by BuMed, and authorization orders ONLY provided in accordance with BuSandA Joint Ltr.

of 30 Nov 1951. No reliefs can be furnished for officers during the period they are attending the course. (ProfDiv, BuMed)

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Specialized Training in Insect and Rodent Control Available to MC, MSC, and HC Officers of the Naval Reserve

Training courses of 2 weeks' duration for Naval Reserve MC, MSC, and HC officers in Insect and Rodent Control are scheduled to convene on the first and third Wednesday of each month at the U. S. Naval Air Station, Jacksonville, Fla., during the fourth quarter, Fiscal Year 1953.

These training courses consist of a series of comprehensive lectures designed to present an up-to-date review of Insect and Rodent Control methods and operations. Special emphasis is placed upon the adaptation of this knowledge to the specialized needs of the U. S. Navy. Each lecture is supplemented with extensive laboratory and field demonstrations.

The uniform of the day is service dress, khaki, or khaki working. It is desirable that all personnel have service dress blue uniform and civilian dress available while on duty. Meals and sleeping quarters will be available at the Bachelor Officers' Quarters for those officers who desire such accommodations. Motor courts are usually available near the Naval Air Station for use of personnel under training if they are accompanied by dependents.

The 1st. 3rd, 4th, 6th, 8th, and 9th Naval Districts and the Potomac River Naval Command have been assigned quotas for these courses for the fourth quarter, Fiscal Year 1953.

Naval Reserve MC, MSC, and HC officers serving on inactive duty are encouraged to take advantage of the opportunity to attend these courses on active training duty orders in a pay status. Officers who desire to attend these courses should submit their request to the Commandant of their home naval district at the earliest practicable date. (ReserveDiv, BuMed)

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From the Note Book

1. Captain Albert R. Behnke, MC, USN, was recently honored by the New York Academy of Sciences, when he was presented the A. Cressy Morrison Prize of 1952. The A. Cressy Morrison Prize is one of two competitive awards made each year by the New York Academy of Sciences and is awarded for the best scientific paper presented in the field of biology. It consists of a Letter of Award and an honorarium. Captain Behnke's paper, "Lean Body Weight in Relation to (Standard) Metabolism" was concerned with the Navy medical research on body composition carried out over the past 14 years. (TIO, BuMed)

2. The Surgeon General of the Army has authorized a service-wide use of dextran as an alternative to plasma. Among the advantages of dextran are freedom from homologous serum jaundice and the cost of $6.50 per pint as compared with $27. for plasma. (J. A. M. A., 28 Feb 1953, Washington News)

3. It is apparent that what physicians say or think, what they fail to say or think, what they do or do not do may contribute vitally to increasing the emotional maladjustment arising from the insecurity, fear, anxiety, unhappiness, or unresolved conflicts of a patient. (J. Internat. Coll. Surgeons, Jan. 1953, E. L. Lederer)

4. The problem of experimentation on human beings is discussed from the research worker's point of view, the physician's point of view, individual's point of view, and the military point of view, by several authors. (Science, 27 Feb 1953)

5. The application of a new compact xenon arc lamp (FA5) to retinal photography in color is described. The circuit required for pulse operation of the lamp is given and some modifications of the Zeiss-Nardenson retinal camera are mentioned. (Brit. J. Ophth., Feb. 1953, P. Hansell and E. J. G. Beeson)

6. A simplified technic for the intra-arterial administration of chemotherapeutic agents is described. The method employs small-diameter catheters inserted into accessible arteries through standard gauge needles. (Cancer, Jan. 1953, R. D. Sullivan, R Jones, Jr., T. G. Schnabel, Jr. and J. McC. Shorey)

7. There is promise for the application of ultrasound as a diagnostic tool. The present status of its therapeutic possibilities requires careful objective and well-controlled study to temper enthusiasm and bring about a clear understanding of the characteristics and effects of ultrasound in order to provide a sound basis for its possible use in medical practice. (Reviews of Physical Medicine and Rehabilitation, Feb. 1953, K. G. Wakim)

8. One hundred and thirteen consecutive midthigh amputations for arteriosclerotic and/or diabetic gangrene of the lower extremities are analyzed in 108 chronically ill patients, practically all of whom were 60 years of age and over. (Arch. Surg., Jan. 1953, L. Carp)

9. Ten patients with assorted forms of permanent and temporary collapse of the lung were all able to tolerate an altitude of 10,000 feet without discomfort or significant symptoms. (Dis. Chest, Feb. 1953, C. Brown)

10. A study to measure the effects of large doses of intravenous priscoline on cerebral blood flow, metabolism, and other cerebral metabolic functions in man is reported in the Journal of Clinical Investigation, Feb. 1953, P. Scheinberg, I. Blackburn, and M. Rich.

11. The ballistocardiogram is unique in providing information concerning aspects of cardiac function not revealed by other diagnostic procedures such as an index of the force of the heart and velocity of ejection. (Circulation, Feb. 1953, R. S. Gubner, M. Dodstein, and H. E. Ungerleider)

12. In a series of 1,000 routine gallbladder examinations, 500 with each medium, the use of Telepaque resulted in nearly 3 times as many excellent shadows as Priodax and the number of cases with faint or no shadows was demonstrably less. (Radiology, Feb. 1953, W. M. Whitehouse and O. Martin)

13. A review of 353 cases of premature separation of the placenta appears in the American Journal of Obstetrics and Gynecology, Feb. 1953, G. F. Bieber.

14. A clinico-anatomic study of 53 cases of amyotrophic lateral sclerosis appears in Archives of Neurology and Psychiatry, Feb. 1953, T. Lawyer, Jr., and M. G. Netsky.

15. A dosage regimen of an initial dose of 600,000 units of benzethacil (Bicillin) suspension followed by 300,000 units every 6 hours should be satisfactory for easily treatable infections due to penicillin-sensitive organisms. (Am. J. M. Sc., Feb. 1953, G. M. Bayne, J. Gylfe, S. Carfagno, and W. P. Boger)

16. The emergency treatment of massive bleeding from esophageal varices by transesophageal suture of these vessels at the time of hemorrhage is discussed in Surgery, Feb. 1953, R. R. Linton and R. Warren.

17. Cdr. Robert B. Johnson, MC, USN, has recently been elected to Fellowship in the American College of Surgeons. (TIO, BuMed)

18. The following naval medical officers have recently been certified in their specialties by American Boards: CDR. W. J. James, MC, USN, American Board of Neurological Surgery and LCDR Alvis B. Dickson, MC, USN, American Board of Orthopedic Surgery. (TIO, BuMed)

19. An economical, sterile, disposable, plastic, waterproof drape for use in transurethral surgery or cystoscopic examination is presented in the Journal of Urology, Jan. 1953, G. L. Garske.

BUMED INSTRUCTION 6120.4 16 Feb 1953

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Medical/Dental Personnel Regularly Assigned

Subj: Induction and separation dental examinations

Ref: (a) Article 6-59, ManMedDept

1. The induction and separation examination shall be Type 2 routine examination as described in ref. (a). BuMed C/L 51-94 is cancelled.

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BUMED INSTRUCTION 5600.2 18 Feb 1953

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Medical Department Personnel

Subj: Publication of research and other professional papers; expenses in connection with

1. This instruction outlines the requirements necessary with respect to the obligation of funds in connection with the publication of research and other professional papers. BuMed C/L 52-58 is cancelled.

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BUMED INSTRUCTION 1510.2 18 Feb 1953

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Dental Personnel

Subj: Specialized courses of instruction for enlisted dental personnel; procurement of candidates for

Ref: (a) Dental Technician Schools and Courses (NavMed P-1309), catalog for 1950
(b) Art. 6-52(5), ManMedDept
(c) Art. 9-18, ManMedDept
(d) Art. 23-144, ManMedDept

1. This instruction promulgates requirements and procedures necessary for assignment of Hospital Corps, Group XI, Dental, personnel to specialized courses of instruction. BuMed C/L 51-146 is cancelled.

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BUMED INSTRUCTION 4630.1 20 Feb 1953

From: Chief, Bureau of Medicine and Surgery
To: Commandants of Naval Districts and River Commands and Commanding Officers, All Naval Hospitals

Subj: Air Transportation by Military Air Transport Service Aircraft for dependents in patient status

Ref: (a) Department of the Air Force dispatch (AFMTP. AT35099 DTG 161839Z) of 16 Apr 1952
(b) OPNAVINST 4630.9

1. This instruction pertains to the transfer of military personnel dependents while in a patient status. BuMed C/L 52-53 is cancelled. CNO ltr, serial 2OP56 has been redesignated as OPNAVINST 4630.9.

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BUMED NOTICE 6320 24 Feb 1953

From: Chief, Bureau of Medicine and Surgery
Chief of Naval Personnel
Commandant of the Marine Corps
To: All Ships and Stations

Subj: Patients; transfer and transportation of

Ref: (a) OPNAVINST 4630.9 (Subj: Air transportation of patients), addressed to all ships and stations
(b) BUMEDINST 6320.1 (Subj: Medical regulating within continental United States), addressed to naval hospitals, commandants of naval district and river commands--with copies to COMSEAFRONTS, CINCPACFLT, CINCLANTFLT, INSPNAVMEDACTS, and NNMC
(c) Art. 11-30 (Subj: Disposition of patients), ManMedDept

1. The following directives are cancelled: Joint MARCORPS-BUMED-BUPERS ltr of 15 Oct 1947 (BuMed C/L 47-143)-in Bulletin BuMed Circular Letters; ALNAV 6-51; ALNAV 32-51; and ALNAV 78-51. These directives have either served their purpose or have been superseded by refs. (a), (b), or (c).

BUMED INSTRUCTION 6320.8 25 Feb 1953

From: Chief, Bureau of Medicine and Surgery
To: All Hospitals, Infirmaries, and Marine Divisions

Subj: Beds and Patients Report (DD Form 443) Med 6030-2, Revision of Reporting Requirements

Ref: (a) Art. 23-204, Instructions Governing Individual Statistical Report of Patients (NavMed P-1313) as amended by BuMed C/L 51-21

1. This instruction promulgates the requirements for reporting beds and patients data on DD Form 443 as required by this Bureau, The Bureau of the Budget, and the Department of Defense. BuMed C/L 51-63, 52-12, and paragraph 3c and 4c of C/L 51-91 are cancelled.

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DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
WASHINGTON 25, D. C.

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